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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/696,232	10/26/2000	Mitsuru Ishikawa	07553.0017	5127

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EXAMINER	
OLSEN, ALLAN W	

ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 03/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Advisory Action Before the Filing of an Appeal Brief	**Application No.** 09/696,232	**Applicant(s)** ISHIKAWA ET AL.	
	Examiner Allan Olsen	**Art Unit** 1763	

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 01 March 2006 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:
   a) ☒ The period for reply expires 6 months from the mailing date of the final rejection.
   b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

   Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
   (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
   (b) ☐ They raise the issue of new matter (see NOTE below);
   (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
   (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

   NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☒ Applicant's reply has overcome the following rejection(s): all rejections set forth in the Office action of November 7, 2005.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
   The status of the claim(s) is (or will be) as follows:
   Claim(s) allowed: _____.
   Claim(s) objected to: _____.
   Claim(s) rejected: *1-5 and 14*.
   Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08 or PTO-1449) Paper No(s). _____
13. ☒ Other: PTO form 892 enclosed.

Allan Olsen
Primary Examiner
Art Unit: 1763

Advisory Action, Item 7 - Appendix

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-4 and 14 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,284,149 issued to Li et al. (hereinafter, Li).

Li teaches a method of etching a layer of BCB (16, 20) that overlies a SiO_2 etch stop layer (18) (see abstract). BCB is the cured polymer of divinyl siloxane-benzocylcobutene. BCB contains SiO_2, C and H and has a dielectric constant of less than 3 (see figure 4 and column 4, lines 1-17). Li teaches etching the BCB with plasma derived from a gas mixture comprising C_4F_8 and N_2 (see column 10, line 21 - column 11, line 35). Li teaches a patterned resist (42, 44) overlies the BCB (see: figure 5, 6, 17 or 18; column 7, lines 21-31).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li.

The above noted teachings of Li are herein relied upon. Additionally, it is noted Li teaches that Dow Chemical, the manufacturer of BCB, recommends etching BCB with a plasma comprising CF_4/Ar (column 4, lines 40-44).

Li does not teach adding Ar to the etchant when etching BCB.

It would have been obvious to one skilled in the art to add Ar to the etchant of Li because the manufacturer of BCB recommends adding Ar to a fluorocarbon etchant and adding an inert gas diluent such as argon, which is a common practice in plasma processing, provides a number of benefits including greater process control.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Li in view of US Patent 6,455,411 issued to Jiang et al. (hereinafter, Jiang).

The above noted teachings of Li are herein relied upon. Additionally, it is noted that Li teaches that Dow Chemical, the manufacturer of BCB, recommends etching BCB with a plasma comprising CF_4/Ar (column 4, lines 40-44).

Li does not teach etching BCB with a mixture of CF_4 and N_2.

Jiang teaches that CF4 and C4F8 or a mixture of the two may be combined with N2 to etch an organic silicate (Column 3, line 27 - column 4, line 13).

It would have been obvious to one skilled in the art to use CF4 in addition to or in lieu of the C4F8 to etch the silicon-containing organic material of Li because Jiang

teaches that C4F8 and CF4 are functionally equivalent with respect to etching a silicon-containing organic material. It would have been obvious to use a N2: CF4 ratio of between 1:1 and 4:1 because Jiang teaches using an etchant with an N2: CF4 ratio within this range and it is considered obvious to optimize process parameters such as flow rates.

Conclusion

Applicant's amendment necessitated the new grounds of rejection presented in this Advisory action.